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ABSTRACT

This curriculum package on math for textile technicians has been developed by the Workforce 2000 Partnership, a network of industries and educational institutions provides training in communication, computation, and creative thinking to employees and supervisors in textile, apparel, and carpet industries at 15 plants in Alabama, Georgia, and South Carolina. The curriculum guide provides a quick view of all major curriculum components: job title for which the curriculum was developed; general instructional objective; overall time; and a chart which is used by reading across the columns to match the specific instructional objective with the estimated amount of time required, learning activities, resources required, and evaluation method. A closure activity reviews and assesses skills learned and may identify needs for further learning. The lesson plan explains the activities in detail. Handouts, transparencies, and pre- and posttest are provided. This module is designed to teach technicians how to use occupational specific math. Objectives include the following: perform computations of addition, subtraction, multiplication, and division, including multiple operations using decimals and common or mixed fractions; perform computations involving finding percents; changing fractions and decimals to percents; and changing percents to fractions and decimals, including using multiple operations in word problems. (YLB)

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ED 424 460

Math for Textile Technicians

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Enterprise State Junior College	CMI Industries, Inc.
MacArthur State Technical College	Opp & Micolas Mills
Southeast Alabama Adult Network	Pridecraft Enterprises
Laurens County Literacy Council	Shaw Industries

The Workforce 2000 Partnership combines the resources of educational and industrial partners to provide education and training in communication, computation and critical thinking skill to employees in the apparel, carpet and textile industries. The project is funded by a US Department of Education National Workplace Literacy Program grant awarded over three years to Enterprise State Junior College in the amount of $2,243,470 (70%) with committed private sector matching funds of $961,487 (30%), bringing the total program resources to $3,204,957. The activities of the Partnership do not necessarily represent the policy of the Department of Education, and you should not assume endorsement by the Federal Government. Participation by the education or industrial partners in the project should also not be construed as endorsement by the Government of any partners' products.

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INTRODUCTION

The Workforce 2000 Partnership is a network of industries and educational institutions that provides training in communication, computation, and creative thinking to employees in the textile, apparel, and carpet industries. The Partnership serves line employees and first-line supervisors at 15 plants in Alabama, Georgia, and South Carolina. The curricula for these topics is developed by the educational partners, which include a junior college, a technical college, and two adult education/literacy programs.

The Partnership uses functional context curricula to teach the topics listed above. This introduction will describe how the curriculum is developed, the contents of this curriculum package, and how to involve learners in the educational process.

CURRICULUM DEVELOPMENT

Before writing curriculum, instructors must know what employees need to learn. An instructional need is defined as the difference between what workers know and what the job requires. Project staff employ a variety of methods to analyze the duties and tasks of the jobs, as well as what kinds of communication, computation, and creative thinking skills are required. The analyses include interviewing exemplary workers; observing these workers on the job; interviewing groups of workers who perform the same or very similar jobs; reviewing documents such as job descriptions, handbooks, signs, memoranda, etc; interviewing supervisors and managers; and structuring surveys to be completed by workers, supervisors, and managers. During the analyses, the curriculum developer will also look for skills that the worker must perform to be considered for promotions.

Needs assessment is a vital part of the curriculum development process because the educator must fully understand what a worker does in order to determine what the worker must learn. As the needs assessment process continues, the educator also collects numerous documents to use as materials for instruction. The use of work-specific materials for instruction is what sets workplace education apart from other types of adult education. These materials allow skills to be learned in the classroom and more readily transferred to the plant floor. Therefore, reading skills improvement takes place as the worker is reading and comprehending the employee handbook; math skills improvement happens while the worker is computing percentages for production; and thinking skills improve as the worker is learning to work as a team member.

CONTENTS OF THIS CURRICULUM PACKAGE

The Curriculum Guide

The curriculum guide provides a quick view of all the major components of the curriculum. The job title for which the curriculum was originally developed and field tested is given in the upper left hand corner under the name of the curriculum module. Next is the General

Instructional Objective that defines the major purpose of the curriculum. The Overall Time is listed to estimate the amount of time that should be devoted to the entire module.

The chart is used by reading across the columns to match the Specific Instructional Objective with the estimated amount of time required, the Learning Activities, Resources required for the activities, and the Evaluation method used to assess achievement of the specific objective. The instructor should carefully review the column on Resources / Materials to ensure that necessary items are readily available. Copyrighted materials may be referenced in the Resources section of the Curriculum Guide; however, no copyrighted material has been duplicated and placed in this module.

Sequencing Learning Activities

Project staff use a model of instructional sequencing adapted from *Literacy at Work* by Jori Phillipi[1]. In this model, the instructional sequence begins with an activity designed to invite the learners into the learning process. This activity will allow the learners to bring to mind past learning and experiences in a way that will facilitate the learning of new information. The activity may come from the workplace or from other real-life situations.

Once the new information has been presented, learners participate in activities designed to practice skills clustered in increasingly larger chunks. These skills are then applied to situations from the workplace to maximize the transfer of the skills learned. A closure activity provides for review and assessment of the skills learned and may also identify needs for further learning.

Lesson Plan

The Lesson Plan contains the detailed explanation of the activities referenced on the Curriculum Guide. Note that the numbering system for the activities is the same on the Curriculum Guide and in the Lesson Plan. In reviewing the Lesson Plan, the instructor should look for places where more appropriate work-specific items can be substituted. This substitution customizes the curriculum for the specific work site and makes the learning activities more meaningful for the learners involved.

Handouts, Transparencies and Tests

The Lesson Plan may require that handouts and/or transparencies be used in teaching the module. If so, these items are located behind the Lesson Plan in the curriculum package and are designated as Handouts or Transparencies in the header at the top of the page. If a pre- and post-test (called Preview and Review) are a part of the module, these will also be found in the Handouts section.

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[1] Phillipi, Jori. *Literacy at Work: The Workbook for Program Directors.* New York: Simon & Schuster Workplace Resources, 1991.

It is essential to provide opportunities for the adult learners to recognize their place in the educational process. The first step in the process is the assessment of the learner's skills and needs, performed jointly by the learner and the instructor. This assessment becomes a part of the learner's Individual Education Plan (IEP). The IEP forms used by the Partnership are contained in this module. The IEP provides for collection of demographic data, evaluation of learner's skills and needs, and an outline of the activities in this module.

Every activity contains opportunities for evaluation, and, as much as possible, the learners perform the evaluation themselves. As curriculum is written, a page is developed for the learners to use to follow the sequence of activities and to document their performance. This page, called the Learner's Page, becomes a part of the IEP.

Frequently, pre- and post-tests (referred to as Previews and Reviews) are administered as a part of the evaluation process. Learners participate in scoring these tests and write their scores on their pages. To vary the assessment methods, the learners may be asked to rate themselves on their ability to perform certain skills, to write a phrase or statement that expresses their belief about their learning, or to specify what skills need more practice.

The purpose for including the learners in the evaluation process is to help them understand that assessment is reflective, constructive, and self-regulated. The learners, having participated in an ongoing needs assessment process, understand why they are participating in the learning activities. Therefore, including them in the evaluation of the learning gives them opportunities for relearning, synthesizing, and applying the skills.

Written self-evaluative comments on the Learner's Page also provide opportunities for communication between the learner and the instructor. This type of assessment is teacher-mediated (*i.e.* usually done when instructed by the teacher), ongoing, and cumulative. The Learner's Page is filed in his or her folder which is regularly reviewed by the instructor. During the reviews, the instructor may write comments in response to those made by the learner.

The goal of this curriculum is to enable learners to transfer classroom academic learning to the plant floor, thereby improving both productivity and efficiency. This curriculum will be most effective if the instructor customizes the curriculum to the specific worksite.

For more information about the project or the curricula contact:

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Module: Math Skills for Textile Technicians **Author**: Ruth F. Smith
Job Title: All Technicians

General Instructional Objective: Utilize occupational specific math.
Overall Time: 30 hours

Specific Instructional Objective	Time	Learning Activities	Resources/Materials	Evaluation (Process/Status)
(Preview)	90 min	1.1 Motivational Activity Administer Preview	Teacher-made preview. Word Problems (Instructor's use) MFTT Word Problems (Instructor's use)	40-item preview Students achieve 85% mastery.
(Motivation)	15 min	1.2 Motivational Activity Discuss Math Thinking Strategies. How they appl / everywhere--home and work.	"Math Thinking Strategies" - Handout Coultas, Jane, James Swalm, and Roslynn Wiesenfied. Strategies For Success in Mathematics. New York: Steck-Vaughn, 1994. 7. Strategies Bookmark	Students can discuss the strategies used in solving math problems.

Specific Instructional Objective	Time	Learning Activities	Resources/Materials	Evaluation (Process/Status)
Perform computations of addition, subtraction, multiplication and division, including multiple operations, using decimals.	15 min	2.1 Instructional Activity Handout "Working with Decimals" Sheets and discuss decimal rules.	"Working with Decimals"- Handout	Instructor critiques students.
	90 min	2.2 Instructional Activity Introduce decimals by asking how we use decimals in everyday life. Discuss what decimals are and how to read, write, compare and order decimals.	Mitchell, Robert P., ed. Decimals. Chicago: Contemporary, 1993. 3-7.	Students are correctly able to work all problems on pages 3-7.
	90 min	2.3 Instructional Activity • Discuss estimating decimals and how estimation can be used in checking answers. • Discuss rounding decimals. • Discuss adding and subtracting decimals using placeholders. • Teach students how to apply functions when working word problems.	Mitchell, Robert P., ed. Decimals. Chicago: Contemporary, 1993. 8-16. "Decimal Targets" - Handout - Texas Instruments - Instructional Materials for the TI-108. USA, 1988.	Students exchange and grade pages 12, 13 and the "Decimal Targets."

Specific Instructional Objective	Time	Learning Activities	Resources/Materials	Evaluation (Process/Status)
	180 min	2.4 Instructional Activity • Discuss multiplying decimals by whole numbers, other decimals and by 10, 100, or 1,000 • Discuss dividing decimals by whole numbers, other decimals and by 10, 100, or 1,000 • Teach students how to apply functions when working word problems.	"A Money Game"- Handout Walch, J. Weston. Using a Calculator. NP. 17. Mitchell, Robert P., ed. Decimals. Chicago: Contemporary, 1993. 17-24.	Individual students work pages 20 and 24 on the board to correct.
	90 min	2.5 Instructional Activity • Discuss changing fractions to decimals. • Discuss comparing fractions and decimals using examples • Teach students how to apply functions when working word problems.	"Food Fun"- Handout Walch, J. Weston. Using a Calculator. NP. 30. Mitchell, Robert P., ed. Decimals. Chicago: Contemporary, 1993. 25-27.	Students can correctly complete all the problems on pages 25-27.
	90 min	2.6 Instructic nal Activity Students work Decimals Skills Review pages 28-28.	Mitchell, Robert P., ed. Decimals. Chicago: Contemporary, 1993. 28-29.	Instructor grades skill reviews and puts in students' folders. Students must achieve 80% mastery.

Specific Instructional Objective	Time	Learning Activities	Resources/Materials	Evaluation (Process/Status)
III. B. 100 Perform computations of addition, subtraction, multiplication and division, including multiple operations, using common or mixed fractions.	15 min	3.1 Motivational Activity Handout "Working with Fractions" sheets and discuss the rules.	"Working with Fractions"-Handout	Instructor critiques students' responses.
	90 min	3.2 Instructional Activity • Introduce fractions. • Discuss writing proper fractions. • Discuss writing improper fractions. • Discuss writing mixed numbers. • Discuss equivalent fractions. • Teach students how to compute problems using each type of fraction.	Mitchell, Robert P., ed. Fractions. Chicago: Contemporary, 1993 3-6. "Practice Sheet #1" - Hand-out	Students are correctly able to work all problems on pages 3-6. Completion of "Practice Sheet #1"
	120 min	3.3 Instructional Activity • Discuss adding like fractions. • Discuss adding unlike fractions. • Discuss adding mixed numbers. • Discuss finding the lowest common denominator. • Discuss estimating with fractions.	Mitchell, Robert P., ed. Fractions. Chicago: Contemporary, 1993. 7-12. "Decimals and Fractions"-Handout	Students are correctly able to work all examples on pages 7-12. Completion of "Decimals and Fractions"

Specific Instructional Objective	Time	Learning Activities	Resources/Materials	Evaluation (Process/Status)
	90 min	3.4 Instructional Activity • Discuss subtracting like fractions. • Discuss subtracting unlike fractions. • Discuss subtracting mixed numbers. • Discuss using regrouping in subtracting fractions. • Teach students how to apply functions in solving word problems.	Mitchell, Robert P., ed. Fractions. Chicago: Contemporary, 1993. 13-18.	Students are correctly able to work all examples on pages 13-17.
	120 min	3.5 Instructional Activity • Discuss multiplying fractions by whole numbers and mixed numbers. • Discuss canceling to simplify in multiplying fractions. • Teach students how to apply functions when working word problems.	Mitchell, Robert P., ed. Fractions. Chicago: Contemporary, 1993. 19-23.	Students are correctly able to work all examples on pages 19-23.
	180 min	3.6 Instructional Activity • Discuss dividing fractions by fractions. • Discuss dividing fractions by whole numbers. • Discuss dividing fractions by mixed numbers. • Teach students how to apply functions when working word problems.	Mitchell, Robert P., ed. Fractions. Chicago: Contemporary, 1993. 24-27.	Students are correctly able to work all problems on pages 24-27.

Specific Instructional Objective	Time	Learning Activities	Resources/Materials	Evaluation (Process/Status)
	45 min	3.7 Instructional Activity Students work Fractions Skills Review on pages 28-29.	Mitchell, Robert P., ed. Fractions. Chicago: Contemporary, 1993. 28-29.	Instructor grades the review and puts in students' folders. Students must achieve 80% mastery.
III. B. 101 Perform computations involving finding percents, changing fractions and decimals to percents, and changing percents to fractions and decimals, including using multiple operations in word problems.	15 min	4.1 Motivational Activity Handout "Working with Percents" sheets and discuss the rules.	"Working with Percents" Handout	Instructor critiques students' responses.
	90 min	4.2 Instructional Activity • Discuss what percents are and understanding them. • Teach students how to relate percents to everyday life.	Mitchell, Robert P., ed. Percents. Chicago: Contemporary, 1993. 3-7.	Students are correctly able to work all problems on pages 3-7.

Specific Instructional Objective	Time	Learning Activities	Resources/Materials	Evaluation (Process/Status)
		4.3 Instructional Activity • Discuss finding the percent • Teach students how to find the percent when the part or whole is known.	Mitchell, Robert P., ed. Percents. Chicago: Contemporary, 1993. 14-15. "Finding a Percent" - Handout "Finding a Percent - Practice" - Handout	Students exchange and correct handouts.
	90 min	4.4 Instructional Activity • Discuss changing a fraction to a percent. • Discuss changing a percent to a fraction. • Discuss changing a decimal to a percent. • Discuss changing a percent to a decimal. • Teach the students how to apply functions to word problems.	Mitchell, Robert P., ed. Percents. Chicago: Contemporary, 1993. 6-9. "Working with Percents-Practice" - Handout.	Students can correctly complete all the problems on pages 6-9. Students exchange and correct "Working with Percents - Practice" sheets.
	45 min	4.5 Instructional Activity Review functions using percents. Handout "Post-Test."	"Post-Test" - Handout	Instructor corrects and lets students correct.

Specific Instructional Objective	Time	Learning Activities	Resources/Materials	Evaluation (Process/Status)
(Closure)	90 min	5.1 Overall Review	40-item Teacher-made review. Word Problems (Instructor's use) MFTT Word Problems (Instructor's use)	Instructor corrects and puts in folder. Students are required to achieve 80% mastery.

Lesson Plans

1.1 Motivational Activity-Preview - 90 minutes
This module covers decimals, fractions and some percents. The purpose of the Preview is to check the skill level of each student in each area. Eighty-five percent mastery is required. (Extra word problems are enclosed to allow the instructor to exchange problems)

1.2 Motivational Activity - 15 minutes
The instructor will discuss Math Thinking Strategies: how they apply everywhere--home and work. Distribute bookmarks to students to keep and refer to if needed.

2.1 Instructional Activity - 15 minutes
Distribute "Working with Decimals" - handout. Discuss decimal rules that apply to all decimal functions.

2.2 Instructional Activity - 90 minutes
Introduce decimals by asking how we use decimals everyday. Discuss what decimals are and how to read, write, compare and order decimals. Assign students pages 3-7.

2.3 Instructional Activity - 90 minutes
Discuss estimating, rounding, adding, and subtracting decimals using zeros as placeholders. The instructor works several examples on the board. Students work pages 8-16. The instructor distributes "Decimal Targets" - handouts. Students grade after completing.

2.4 Instructional Activity - 180 minutes
Distribute "A Money Game" - handout for students to work. Discuss multiplying and dividing decimals by whole numbers, other decimals and by 10, 100, or 1000. Discuss using these functions to work word problems on pages 20 and 24. Assign pages 17-24. Have students correct pages 20 and 24 by working the problems on the board.

2.5 Instructional Activity - 90 minutes
Discuss changing fractions to decimals and comparing fractions and decimals using examples from the book. Work through pages 25-27 together as a class. Distribute the "Food Fun" - handout and have students complete.

2.6 Instructional Activity - 90 minutes
Review different decimal functions. Have students complete the Decimal Skills Review on pages 28-29. The instructor will grade these pages and place them in the students' folders. Eighty percent mastery required.

3.1 Motivational Activity - 15 minutes
Discuss possible everyday uses for fractions. Distribute "Working with Fractions" - handout. Go over rules with students. The instructor works several examples of each function on the board.

3.2 Instructional Activity - 90 minutes
Introduce fractions. Discuss writing proper fractions, improper fractions, mixed numbers and equivalent fractions. The instructor works several examples on the board. Assign the students pages 3-6. Correct as a class. Assign "Practice Sheet #1." Correct as a class.

3.3 Instructional Activity - 120 minutes
Discuss adding like fractions, unlike fractions, and mixed numbers. Discuss how to find the lowest common denominator and estimating with fractions, The instructor works several examples on the board. Assign students pages 7-12. Distribute the "Decimals and Fractions" - handout. The instructor grades this handout.

3.4 Instructional Activity - 90 minutes
Discuss subtracting fractions including: like fractions unlike fractions, mixed numbers, and regrouping. The instructor works several examples on the board. Assign the students pages 13-18.

3.5 Instructional Activity - 120 minutes
Discuss multiplying fractions by whole numbers and mixed numbers. Discuss canceling to simplify. The instructor works several examples on the board. Assign the students pages 19-23.

3.6 Instructional Activity - 180 minutes
Discuss dividing fractions by fractions, by whole numbers and by mixed numbers. Select individual students to work examples on the board. Assign pages 24-27.

3.7 Instructional Activity - 45 minutes
Have students complete the Fractions Skills Review on pages 28 and 29. The instructor grades these and puts them in the students' folders.

4.1 Motivational Activity - 15 minutes
Distribute and discuss the "Working with Percents" - handout.

4.2 Instructional Activity - 90 minutes
Discuss how percents are used in everyday life. Discuss what percents are and how to understand them. The instructor works several examples on the board. Assign the students pages 3-5.

4.3 Instructional Activity - 90 minutes

Discuss finding the percent. Assign pages 14-15. Distribute "Finding a Percent" - handout and "Finding a Percent-Practice" - handout. The students complete and exchange to correct.

4.4 Instructional Activity - 90 minutes

Discuss changing a fraction to a percent and a decimal to a percent. Discuss changing a percent to a fraction and to a decimal. Assign pages 6-9. Distribute "Working with Percents" - handout and have students complete. The instructor grades this handout and returns to students.

4.5 Instructional Activity - 45 minutes

Review and discuss percents. Distribute the "Post-Test" - handout. Have students complete this handout. The instructor grades this handout and returns to students to correct.

5.1 Closure - 90 minutes

The instructor distributes the "Review" - handout to the students to complete. After completion of the review, the instructor takes a few minutes to correct and review the answers. This review is placed in the individual students' folders. Eighty percent mastery is required.

(Extra word problems are enclosed to allow the instructor to exchange problems.)

PREVIEW

Adding Decimals:

1. $34.86
   23.90
   + 12.65

2. 23.45 + 9.54 =

3. Each morning, Amanda drives 3.8 miles to drop her daughter off at school. She then drives another 2.75 miles to get to work. To the nearest tenth of a mile, how far does Amanda drive between home and work each morning?

Subtracting Decimals:

4. 17.52
   - 9.67

5. 17.37 - 9.59 =

6. Ephran's dinner bill was $6.49. How much change should Ephran receive if he pays with a $10 bill?

Multiplying Decimals:

7. 9.5
   X 4

8. 3.26 X 12 =

9. 8.41
   X 0.24

10. 5.6 X 0.06 =

11. For each hour of overtime, Wilma earns $8.50 per hour. How much overtime pay will Wilma earn on a day in which she works 4.5 overtime hours?

Dividing Decimals:

12. 18.6 ÷ 3

13. 80 ÷ 4.8

14. $2.64 \div 1.2$

15. $10 \div 0.05$

16. Mona paid $12.84 for a 7-pound turkey. To the nearest cent, how much did Mona pay per pound?

17. While traveling through Oregon, Donald drove 404.25 miles on 16.5 gallons of gas. Knowing this, determine his car's mileage--the number of miles his car can go on one gallon.

Adding Fractions:

18.
$$\begin{array}{r} \frac{5}{6} \\ \frac{1}{+6} \end{array}$$

19.
$$\begin{array}{r} \frac{5}{6} \\ \frac{2}{+3} \end{array}$$

20. Gracie placed 1 ½ cups of flour, 3/4 cup of sugar, and 1/3 cup of butter in a mixing bowl. How many cups of ingredients did Gracie place into the bowl?

Subtracting Fractions:

21.
$$\begin{array}{r} \frac{7}{9} \\ \frac{4}{-9} \end{array}$$

22. $9/12 - 2/12 =$

23.
$$\begin{array}{r} \frac{15}{16} \\ \frac{5}{-8} \end{array}$$

24.
$$\begin{array}{r} 6 \\ \frac{5}{-16} \end{array}$$

25. The larger of two nails is 1 1/4 inches long, and the smaller nail is 3/4 inch long. By how much do the nails differ in length?

Multiplying Fractions:

26. 1/5 X 5/6 =

27. 3 3/4 X 2 1/3 =

28. Laura mixes 2/3 pint of thinner in each gallon of stain she uses. How much thinner will Laura need to thin 7 ½ gallons of stain?

Dividing Fractions:

29. 1/3 ÷ 3/8 =

30. 4 ÷ 4/5 =

31. A grocer bought a box of canned spices. The box of 3/4 -pound cans weighs 48 pounds. Ignoring the weight of the box itself, determine how many cans of spice are in the box.

Percents:
(fractions to percent)

32. 1/3 =

33. If 7/10 of the employees participated in the workforce education program, what percent of the employees did not participate?

(decimal to percent)

34. 0.75 =

35. 92.64% of style 9171 ran last week was first-quality cloth. The remainder was second-quality cloth. Write the percentage of seconds in decimal form.

(percent to fraction)

36. 4% =

37. If 1/20 represents the amount of waste produced in carding, what is the percentage of waste produced?

(percent to decimal)

38. 20% =

39. If 24% of the fiber is removed in going through the pickers, write the decimal form of the fiber removed.

40. John has computed that .38 of his total pay is deducted for taxes, medical insurance, social security, etc. What percent of his pay is deducted?

PREVIEW
KEY

Adding Decimals:

1. $34.86
   23.90
   + 12.65
   $71.41

2. 23.45 + 9.54 = **$32.99**

3. Each morning, Amanda drives 3.8 miles to drop her daughter off at school. She then drives another 2.75 miles to get to work. To the nearest tenth of a mile, how far does Amanda drive between home and work each morning? **6.55 = 6.6**

Subtracting Decimals:

4. 17.52
   - 9.67
   7.85

5. 17.37 - 9.59 = **7.78**

6. Ephran's dinner bill was $6.49. How much change should Ephran receive if he pays with a $10 bill? **$3.51**

Multiplying Decimals:

7. 9.5
   X 4
   38.0

8. 3.26 X 12 = **39.12**

9. 8.41
   X 0.24
   2.0184

10. 5.6 X 0.06 = **.3360**

11. For each hour of overtime, Wilma earns $8.50 per hour. How much overtime pay will Wilma earn on a day in which she works 4.5 overtime hours? **$38.25**

Dividing Decimals:

12. 18.6 ÷ 3
6.2

13. 80 ÷ 4.8
.06

14. 1.2 ÷ 2.64
2.2

15. 0.05 ÷ 10
200

16. Mona paid $12.84 for a 7-pound turkey. To the nearest cent, how much did Mona pay per pound? **$1.83**

17. While traveling through Oregon, Donald drove 404.25 miles on 16.5 gallons of gas. Knowing this, determine his car's mileage--the number of miles his car can go on one gallon. **24.5**

Adding Fractions:

18. 5/6 + 1/6
6/6 = 1

19. 5/6 + 2/3
9/6 = 1 3/6 = 1 ½

20. Gracie placed 1 ½ cups of flour, 3/4 cup of sugar, and 1/3 cup of butter in a mixing bowl. How many cups of ingredients did Gracie place into the bowl? **2 7/12**

Subtracting Fractions:

21. 7/9 - 4/9
3/9 = 1/3

22. 9/12 - 2/12 = **7/12**

23. 15 / 16 / 5 / - 8 = **5/16**

24. 6 / 5 / - 16 = **5 11/16**

25. The larger of two nails is 1 1/4 inches long, and the smaller nail is 3/4 inch long. By how much do the nails differ in length? **2/4 = ½**

Multiplying Fractions:

26. 1/5 X 5/6 = **1/6**

27. 3 3/4 X 2 1/3 = **8 3/4**

28. Laura mixes 2/3 pint of thinner in each gallon of stain she uses. How much thinner will Laura need to thin 7 ½ gallons of stain? **5 pints**

Dividing Fractions:

29. 1/3 ÷ 3/8 = **8/9**

30. 4 ÷ 4/5 = **5**

31. A grocer bought a box of canned spices. The box of 3/4 -pound cans weighs 48 pounds. Ignoring the weight of the box itself, determine how many cans of spice are in the box. **64 cans**

Percents:
(fractions to percent)

32. 1/3 = **33 1/3%**

33. If 7/10 of the employees participated in the workforce education program, what percent of the employees did not participate? **30%**

(decimal to percent)

34. 0.75 = **75%**

35. 92.64% of style 9171 ran last week was first-quality cloth. The remainder was second-quality cloth. Write the percentage of seconds in decimal form. **7.36% or .0736**

(percent to fraction)

36. 4% = **1/25**

37. If 1/20 represents the amount of waste produced in carding, what is the percentage of waste produced? **.05 = 5%**

(percent to decimal)

38. 20% = **.20**

39. If 24% of the fiber is removed in going through the pickers, write the decimal form of the fiber removed. **.24**

40. John has computed that .38 of his total pay is deducted for taxes, medical insurance, social security, etc. What percent of his pay is deducted? **38%**

Strategies for Success

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Coultas, Jane, James Swalm, and Roslynn Wiesenfied. Strategies For Success in Mathematics. Steck-Vaughn, 1994. 7.

STRATEGIES BOOKMARK

The Four Step Plan To Problem Solving - ACSC

Analyze - *Analyze* the information so you understand what you must do.

Choose - *Choose* a strategy you think may help you solve the problem.

Solve - *Solve* the problem using the strategy you choose.

Check - *Check* your answer. Read the problem again and see if your answer makes sense.

Adapted from: Coultas, Jane, James Swalm and Roslynn Wiesenfied. Strategies For Success in Mathematics. New York: Steck-Vaughn, 1994, 7.

WORKING WITH DECIMALS

Exact measurements are often expressed in decimal form. It is common for numbers to be expressed in hundredths, thousandths, and ten-thousandths for very accurate work.

Here are some rules about decimals:

1. In mixed decimals, whole numbers are to the LEFT of the decimal point. Numbers to the RIGHT of the decimal point are part of a whole number. They are decimal fractions. Read the decimal point as "and."

   Example: 3.75 (3 is the whole number)
   (.75 is the fraction or part of a whole)

   This number should be read as three and seventy-five hundredths.

2. Decimal fractions are not spoken with the word "and."

   Example: .6 is spoken as six tenths,
   .84 is spoken as eighty-four hundredths
   .412 is spoken as four hundred twelve thousandths
   .9719 is spoken as nine thousand seven hundred nineteen ten-thousandths
   .37241 is spoken as thirty-seven thousand two hundred forty-one hundred thousandths

3. When putting decimals in order, or comparing decimals, first change all the decimals so each has the same number of places. You can put zeros to the right of the fraction without changing its value.

   Example: Which is larger: .08 or.4
   First put a zero to the right of .4 to change it to .40. Both decimals are now hundredths.
   Decide which is larger, .08 or .40. Forty hundredths is larger than eight hundredths. Therefore, .4 is larger than .08.

4. When adding decimals, line up the numbers to be added so all the decimal points are under each other.

   Example:

.079	.079	
.07	.070	-- add zero to hold place value
.068	.068	
	.217	

5. When subtracting decimals:
   * Place the larger number on top,
   * Line up the decimal points,
   * Add zeros to the right so each decimal has the same number of places,
   * Subtract the same way as with whole numbers,
   * Bring down the decimal point.

   Example: 18.3 minus .257

18.3	18.300
- .257	- .257

6. When multiplying decimals:
   * Set the problem up the same as with whole numbers,
   * Count the total number of decimal places in both numbers,
   * Starting from the right, count to the left the total number of places. Put the decimal at that point in the answer.

   Example:
   ```
    2.44
   x .2
   .488
   ```
   Multiply the numbers. Count the number of decimal places in each number. 2.44 has two decimal places, .2 has one decimal place. Count three decimal places from the right.

7. When dividing a decimal by:

   A whole number:
   * Bring the point up in the answer directly above its position in the problem.

   Example:
   ```
     1.24
   6)7.44
     6
     14
     12
      24
      24
   ```

By a decimal:

* First move the decimal point in the number outside the bracket (divisor) to the right as far as it will go.
* Then move the decimal point inside the bracket (dividend) the same number of places.
* Bring the decimal point in the answer directly above the decimal point in the dividend.

Example:
$$.03\overline{)4.695}\quad 156.5$$

Whole number by a decimal:

* Put a decimal point at the right of the whole number.
* Move the decimal point outside the bracket (divisor) to the right as far as possible.
* Next, move the decimal point inside the bracket (dividend) to the right the same number of places as in the divisor. Add zeros whenever necessary.
* Divide and bring the decimal point up into the answer above its new position.

Example:
$$.003\overline{)15.000}\quad 5000.$$

Decimal Targets

This handout contains copyrighted material and, therefore, cannot be included in this package. A copy may be obtained from the original source:

"Decimal Targets," Texas Instruments - Instructional Materials for the TI-108. USA, 1988.

A Money Game

This handout contains copyrighted material and, therefore, cannot be included in this package. A copy may be obtained from the original source:

Walch, J. Weston. Using a Calculator. 1992. NP. 17.

Food Fun

This handout contains copyrighted material and, therefore, cannot be included in this package. A copy may be obtained from the original source:

Walch, J. Weston. Using a Calculator. 1992. NP. 17.

WORKING WITH FRACTIONS

Fractions show a part of a whole. Every fraction has two terms: a NUMERATOR (the top number) and a DENOMINATOR (the bottom number). The NUMERATOR (top) tells how many equal parts or things you are referring to. The DENOMINATOR (bottom) tells the number of equal parts that are in the whole object or group.

1. When adding or subtracting fractions:
   Like Fractions--both fractions have a common denominator.
   - * Add of subtract the numerators
   - * Write the answer over the common denominator
   - * Reduce the answer to lowest terms, if necessary

Example: Add 1/16 to 3/16.

$$\begin{array}{r} \frac{1}{16} \\ \frac{3}{16} \\ \hline \frac{4}{16} \end{array} \quad \frac{1}{4}$$

Subtract 2/12 from 11/12.

$$\begin{array}{r} \frac{11}{12} \\ -\ \frac{2}{12} \\ \hline \frac{9}{12} \end{array} \quad \frac{3}{4}$$

Unlike fractions-have different denominators.

- * Find the lowest common denominator and change one or both of the fractions to make like fractions.
- * Add or subtract like fractions.
- * Reduce the answer, if necessary.

Example: Add ½ and 2/8

$$\begin{array}{r} 1\ \frac{4}{2} \\ \frac{2}{8} \\ \hline \frac{6}{8} \end{array} \quad \begin{array}{r} \frac{}{8} \\ \frac{2}{8} \\ \hline \end{array} \quad \frac{3}{4}$$

Subtract 1/6 from ½ $\frac{1}{2}$ $\frac{3}{6}$

$$\begin{array}{r} \frac{1}{6} \quad \frac{1}{6} \\ \hline \frac{2}{6} \quad \frac{1}{3} \end{array}$$

2. When adding or subtracting mixed numbers (whole numbers and fractions).
   - Convert the fractions into fractions with common denominators.
   - Add or subtract the fractions, then add or subtract the whole numbers.
   - If the sum or difference of the fractions is an improper number (the top number is larger than the bottom), change it to a mixed number and combine it with the whole number.
   - Reduce to lowest terms, if necessary.

Example: Add 3 3/4 and 6 1/3

$$\begin{array}{r} 3\frac{3}{4} \quad \frac{9}{12} \\ 6\frac{1}{3} \quad \frac{4}{12} \\ \hline 9\frac{13}{12} \quad 1\frac{1}{12} \quad 10\frac{1}{12} \end{array}$$

3. Sometimes the number you are subtracting from has the smaller fraction or no fraction. Then you must borrow 1 from the whole number.

Example: Subtract $3\frac{2}{3}$ from 6.

$$\begin{array}{r} {}^{5}6\frac{3}{3} \\ -3\frac{2}{3} \\ \hline 2\frac{1}{3} \end{array}$$

Example: Subtract 2 5/6 from 5 1/3.

$$\begin{array}{r} 5\,{}^{1}/_{3} \quad {}^{2}/_{6} \quad 5\,{}^{2}/_{6} \quad {}^{8}/_{6} \quad 4\,{}^{8}/_{6} \\ -\,2\,{}^{5}/_{6} \quad {}^{5}/_{6} \quad 2\,{}^{5}/_{6} \quad {}^{5}/_{6} \quad 2\,{}^{5}/_{6} \\ \hline 2\frac{3}{6} \quad 2\frac{1}{3} \end{array}$$

PRACTICE SHEET #1

Name _____ Date _____

Reducing Fractions

Reduce each fraction to lowest terms.

1. $\frac{3}{9} =$ $\frac{6}{48} =$ $\frac{16}{18} =$ $\frac{25}{50} =$ $\frac{8}{12} =$

2. $\frac{20}{25} =$ $\frac{32}{36} =$ $\frac{33}{77} =$ $\frac{14}{21} =$ $\frac{4}{200} =$

Simply the following improper fractions. Be sure to write answers in lowest terms.

3. $\frac{7}{2} =$ $\frac{14}{5} =$ $\frac{13}{12} =$ $\frac{20}{6} =$ $\frac{39}{12} =$

4. $\frac{18}{4} =$ $\frac{9}{9} =$ $\frac{24}{7} =$ $\frac{10}{4} =$ $\frac{36}{10} =$

Rewrite each fraction or mixed number in the equivalent form indicated.

5. $\frac{3}{4} = \frac{\quad}{12}$ $\frac{2}{6} = \frac{\quad}{18}$ $\frac{16}{4} = \frac{\quad}{1}$

$2\ 1 = __$ $12 = 1__$

Decimals and Fractions

Add or Subtract

1) $\frac{2}{5} + \frac{3}{4}$

2) $\frac{2}{3} + \frac{5}{9}$

3) $\frac{3}{4} + \frac{5}{8} + \frac{7}{12}$

4) $\frac{2}{3} + \frac{1}{4} + \frac{5}{12}$

5) $\frac{7}{8} - \frac{2}{3}$

6) $\frac{3}{4} - \frac{1}{3}$

7) $\frac{5}{7} - \frac{2}{5}$

8) $\frac{5}{8} - \frac{3}{10}$

9) $12\ 5/9 + 7\ 1/6$

10) $9\ 7/10 + 5\ 2/5$

11) $15\ 1/3 + 6\ 7/9$

12) $12\ 3/4 + 7\ 7/10$

13) $22\ 3/10 - 15\ 2/5$

14) $25\ 2/7 - 11\ 1/3$

15) $13\ 1/5 - 9\ 3/8$

16) $15\ 5/12 - 11\ 2/3$

Round to chosen place value.

tenths

17) .38 .53 1.93 3.062 7.952

hundredths

18) .235 1.052 6.500 7.806 .246

thousandths

19) .4737 1.9472 6.0089 12.1052

Add

20) 14.581 + 8.627 ____

23.45 + 9.54 ____

4.9 + 1.325 ____

4 + 2.4 + 1.75 ____

Subtract

21) 17.52 - 9.67 ____

5.00 - 2.75 ____

8.30 - 4.28 ____

9.3 - 2.7 ____

22) .945 - .6 ____

.8 - .225 ____

9 - 6.735 ____

6 - 4.5 ____

Multiply

23) .005 × .2 ____

1.1 × .03 ____

.006 × 4 ____

14.8 × .47 ____

24) 100 × 3.7 ____

1000 × .59 ____

8.35 × 100 ____

13.8 × 10 ____

Divide

25) $.2\overline{).38}$

$3.6\overline{).0144}$

$2.3\overline{)483}$

$4\overline{)3}$

26) 4.5 ÷ 10 =

27.3 ÷ 10 =

.6 ÷ 10 =

13.45 ÷ 10 =

27) 14.2 ÷ 100 = .6 ÷ 100 = 1.3 ÷ 100 = .32 ÷ 100 =

28) 1.8 ÷ 1000 = 15.8 ÷ 1000 = 1.8 ÷ 1000 = 37.5 ÷ 1000 =

Each problem counts 1.5.

WORKING WITH PERCENTS

Percent means parts out of 100. Percent is written as the number of hundredths followed by the percent sign (%). Dividing a whole into 100 equal parts is an easy way to visualize percent.

1. To change a fraction to a percent, multiply by the fraction by 100%.

   Example: Change ½ to a percent. $\frac{1}{2} \times 100\% = 50\%$

2. To change a decimal to a percent:
   - Move the decimal point two places to the right, adding a zero or two if necessary
   - Drop the decimal point if the percent is a whole number
   - Add a percent sign

   Example: Change 0.05 to a percent. 0.05 0.05 5%
   Drop the unneeded zeros

   Change 2.5 to a percent 2.5 2.50 Add a zero 250

3. To change a percent to a fraction:
   - Write the percent as a fraction with a denominator of 100
   - Reduce the fraction if possible.

   Example: Write 40% as a fraction. $40\% \quad \frac{40}{100} = \frac{2}{5}$

   Write 250% as a mixed number. $250\% = \frac{250}{100} \quad 250 \div 100 = 250$

   $= 2\frac{1}{2}$

4. To change a percent to a decimal:
   * Move the decimal point two places to the left, adding one or two zeros if necessary.

   (Note: The decimal point of a whole number is understood to be at the right of the number.)
   * Drop the percent sign.
   * Drop any zeros that are not needed.

Example:	Change 25% to a decimal.	25%	.25	0.25	Write a leading zero
	Change 70% to a decimal.	70%	.70	0.70=0.7	Drop the unneeded zero

5. To solve percent problems, a percent equation must be used. There are three ways to write the percent equation.

PART= percent X whole PERCENT= $\frac{\text{part}}{\text{whole}}$ WHOLE= $\frac{\text{part}}{\text{percent}}$

To find the part, multiply the percent times the whole.
Example: A $60 jacket is on sale for "25% Off." How much can you save?

Change 25% to a decimal. Multiply $60 by 0.25.

25% = 0.25

$60
X .25
3 00
12 00
$15.00

To find the percent, divide the part by the whole.
Example: 9 of the 36 students in Ted's class are 8 years old. What percent of the class is made up of 8 year-olds?

Write the part 9 over the whole 36

part = 9 = 1
whole 36 4

Multiply $\frac{1}{4}$ by 100%

$\frac{1}{4} \times 100\% = 25\%$

9 is 25% of 36

To find the whole, divide the part by the percent.

Example: 40% of the parts in a box were defective. If 16 parts are defective, what is the total number of parts in the box.

Change 40% to a decimal.

40% = 0.40 =0.4

Divide 16 by 0.4

$$0.4\overline{)160} = 40$$

$$\begin{array}{r} 16 \\ \hline 00 \\ 00 \end{array}$$

Change 40% to a fraction.

$$40\% = \frac{40}{100} = \frac{2}{5}$$

Divide by $\frac{2}{5}$.

$$\frac{16}{1} \times \frac{2}{5}$$

$$\frac{16}{1} \times \frac{5}{2} = 40$$

6. To find the percent of increase or decrease, divide the part (the change in the amount) by the original amount (whole).

Example: A jacket was reduced from $80 to $60. What percent reduction is this?

$80 – $60 = $20 Subtract to find the amount of decrease

> percent decrease = amount of decrease / original price

$\frac{\$20}{\$80} = \frac{1}{4} = 25\%$ (Note: The denominator of the fractions is ALWAYS the original number)

$\frac{1}{4} \times 100\% = 25\%$

FINDING A PERCENT

The cutting floor had 375 yards of fabric to spread. Once the markers were put down and the fabric was cut, 17 yards was considered waste. What percent of the fabric was waste?

To find a percent, write and solve an equation.

Let P stand for percent in decimal form.

Ask yourself: What percent of 375 is 17?

P x 375 = 17

P = 17/375

P = .0453

P = 4.53%

Ex. What percent of 18 is 9?

_____ x 18 = 9

_____ = 9/18 = ½ = 0.5 = 50%

Ex. 4 is what percent of 800?

4 = _____ x 800

4/800 = _____

1/200 = .005 = 0.5%

Example:

In one week a certain style of cloth had 274 yards of seconds. Of these seconds, 70 yards was due to bad selvage. If 70/274 is the fractional amount of seconds due to bad selvage for this style, express the amount as a decimal. Round to hundredths. Convert the decimals to a percent.

FINDING A PERCENT – PRACTICE

1. What percent of 28 is 21?
2. What percent of 48 is 12?
3. 16 is what percent of 25?
4. 13 is what percent of 65?
5. 36 is what percent of 180?
6. What percent of 10 is 8?
7. 15 is what percent of 60?
8. 160 is what percent of 200?
9. A loom is supposed to run 214 picks per minute. Because of the belt being slack, it is running 204 picks per minute. To the nearest percent, what percent production is it losing?
10. An inch represents what percent of a foot?

FINDING A PERCENT – PRACTICE

KEY

1. 75%
2. 25%
3. 64%
4. 20%
5. 20%
6. 80%
7. 25%
8. 80%
9. 5%
10. 8.3%

WORKING WITH PERCENTS - PERCENTS SHEET

Write as a Decimal:

1. 44% 2. 500% 3. 150% 4. 5%

5. 80% 6. 15.8% 7. 25% 8. 89.8%

Write as a Percent:

9. 0.37 10. 0.06 11. 0.47 12. 0.08

13. 0.7 14. 0.66 15. 0.84 16. .7556

Write each Percent as a Fraction:

17. 50% 18. 9% 19. 110% 20. 33.1%

Write each Fraction and Mixed Number as a Percent:

21. 18/200 22. 7/100 23. 5/6 24. 12/300
25. 16/25

26. If 7/10 of the employees participated in the workforce education program, what percent of the employees did not participate?

27. If a sewing machine operator completed 94% of her work in one week without error, in what fraction of her work did errors occur?

28. John has computed that 0.38 of his total pay is deducted for taxes, medical insurance, social security, etc. What percent of his pay is deducted?

29. If 1/20 represents the amount of waste produced in carding, what is the percentage of waste produce?

30. If .24% of the fiber if removed in going through the pickers, write the decimal form of the fiber removed.

PRACTICE SHEET - ANSWER KEY

1. 0.44
2. 5
3. 1.5
4. 0.05
5. 0.80
6. .158
7. .25
8. 0.8980
9. 37%
10. 6%
11. 47%
12. 8%
13. 70%
14. 66%
15. 84%
16. 75.56%
17. 1/2
18. 9/100
19. 1 1/10
20. 1/3
21. 9%
22. 7%
23. 83 1/3%
24. 4%
25. 64%
26. 30%
27. 3/50
28. 38%
29. 0.0028
30. .08

POST - TEST

Write as a percent.

1. 9/100 2. 7/25 3. 0.03 4. 0.569

Write as a decimal.

5. 62.5% 6. 5%

Write as a fraction.

7. 15% 8. 16.4%

Solve.

9. 7 is what percent of 35?
10. 80% of 60 is what number?
11. 50% of what number is 18.5%?
12. 19 is what percent of 20?
13. If a roll of fabric weighs 375 pounds, how much does 30% of the roll weigh?
14. Alice earns $240 and 15% is taken out of her check for taxes. How much is taken out for taxes?
15. One weaver's production efficiency rose from 92.1% to 97.1%. What is the increase in efficiency to the nearest percent?

POST - TEST
KEY

Write as a percent.

1. 9/100 **9%**
2. 7/25 **28%**
3. 0.03 **3%**
4. 0.569 **56.9%**

Write as a decimal.

5. 62.5% **.625**
6. 5% **.05**

Write as a fraction.

7. 15% $\frac{15}{100} = \frac{3}{20}$
8. 16.4% $\frac{16\ 4/10}{100} = \frac{164/10}{100} = \frac{82/5}{100}$

Solve.

9. 7 is what percent of 35? **20%**
10. 80% of 60 is what number? **48**
11. 50% of what number is 18.5%? **37**
12. 19 is what percent of 20? **95%**
13. If a roll of fabric weighs 375 pounds, how much does 30% of the roll weigh? **112.50 lbs.**
14. Alice earns $240 and 15% is taken out of her check for taxes. How much is taken out for taxes? **$36.00**
15. One weaver's production efficiency rose from 92.1% to 97.1%. What is the increase in efficiency to the nearest percent? **5%**

REVIEW

Adding Decimals:

1. $34.86
   23.90
   + 12.65

2. 23.45 + 9.54 =

3. Harry had three bobbins of yarn to put on a machine. One bobbin weighed 1.43 lbs., another weighed 1.501 lbs., and the last one weighed 1.890 lbs. What was the total weight of all three bobbins?

Subtracting Decimals:

4. 17.52
   − 9.67

5. 17.37 − 9.59 =

6. Spooler drums are running 13.64 yards per minute. By changing pulleys, the drum is changed to run 11.325 yards per minute. What is the difference in the drum speeds?

Multiplying Decimals:

7. 9.5
   x 4

8. 3.26 x 12 =

9. 8.41
   x 0.24

10. 5.6 x 0.06 =

11. The cost of a filling detector is $94.25 each. Dennis, the supply clerk, ordered 6 of these on Tuesday and another 3 on Friday. How much will the total cost be for filling detectors?

Dividing Decimals:

12. $3\overline{)18.6}$

13. $80\overline{)4.8}$

14. $1.2\overline{)2.64}$

15. $0.05\overline{)10}$

16. Janice runs 5 MJS spinning frames. The efficiency rates for her frames on Wednesday were: frame #11 -- 91.3, frame #13 -- 97.6, frames #15 -- 92.6, and frame #16 -- 98.1. What was Janice's average efficiency rating for that day? (Remember to divide the total by the number of numbers used to get the average.)

17. Joey drives 12 miles round trip to work each day. He drives all the way around the parking lot each day to park in the space next to the exit. The distance around the parking lot is .2 mile. How many miles does he travel each way to work when he does not stop at Hardee's? (Remember to subtract the distance around the parking lot only once.)

Adding Fractions:

18. $\begin{array}{r} \frac{5}{6} \\ \frac{1}{+\ 6} \\ \hline \end{array}$

19. $\begin{array}{r} \frac{5}{6} \\ +\ \frac{2}{3} \\ \hline \end{array}$

20. Andrew used 1/3 gallon of thinner on Tuesday, 1/4 gallon on Wednesday, and 3/4 gallon on Thursday. How much thinner did Andrew use in all?

Subtracting Fractions:

21. $\begin{array}{r} \frac{7}{9} \\ -\ \frac{4}{9} \\ \hline \end{array}$

22. 9/12 – 2/12 =

23. $\begin{array}{r} 15 \\ 16 \\ 5 \\ -\ 8 \\ \hline \end{array}$

24. $\begin{array}{r} 6 \\ \\ 5 \\ -\ 16 \\ \hline \end{array}$

25. A beam running blend has a diameter of 24 7/8 inches and a beam running cotton has a diameter of 26 2/3 inches. What is the difference between the diameter of the cotton beam and the blend beam?

Multiplying Fractions:

26. 1/5 x 5/6 =

27. 3 3/4 x 2 1/3 =

28. Mary can weave 8 3/4 yards of cloth in one hour on loom #6. How much cloth will she weave in 8 hours if the loom does not break down?

Dividing Fractions:

29. 1/3 ÷ 3/8 =

30. 4 ÷ 4/5 =

31. Gracie wanted to figure out how many women were on third shift at Bailey Plant. She knew that a total of 90 people (men and women) worked third shift. With James, Joey, Jimmy, Tim, and Larry to help her, she counted all the women at work. If 1/3 of the total employees were women, how many women work on third shift at Bailey Plant?

Percents:
(fractions to percent)

32. 1/3 =

33. If 3/4 of the students in the Math for Textile Technicians classes make very good grades on the final review, what percent of the employees did not do well?

(decimal to percent)

34. 0.75 =

35. 92.64% of style 9171 ran last week was first-quality cloth. The remainder was second-quality cloth. Write the percentage of seconds in decimal form.

(percent to fraction)

36. 4% =

37. If 1/20 represents the amount of waste produced in carding, what is the percentage of waste produced?

(percent to decimal)

38. 20% =

39. If 24% of the fiber is removed in going through the pickers, write the decimal form of the fiber removed.

40. John has computed that .38 of his total pay is deducted for taxes, medical insurance, social security, etc. What percent of his pay is deducted?

REVIEW
KEY

1. **71.41**
2. **32.99**
3. **4.821 lbs.**
4. **7.85**
5. **7.78**
6. **2.315 yards per minute**
7. **38**
8. **39.12**
9. **2.0184**
10. **0.336**
11. **$848.25**
12. **6.2**
13. **0.06**
14. **2.2**
15. **200**
16. **94.86 average effeciency rate**
17. **5.9 miles**
18. **1**
19. **1 ½**
20. **1/13 gallons of thinner**
21. **1/3**
22. **7/12**
23. **5/16**
24. **5 11/16**
25. **1 19/24 inches**
26. **1/6**
27. **8 3/4**
28. **70 yards of cloth**
29. **8/9**
30. **5**
31. **30 women**
32. **33 1/3%**
33. **25 % of the employees did not do well**
34. **75%**
35. **0.0736**
36. **2/25**
37. **5% waste produced**
38. **.2**
39. **.24 of the fiber removed**
40. **38%**

WORD PROBLEMS

1. There are 30 women on second shift. There are 90 total employees. Reduced to lowest terms, what fraction shows the number of women on second shift?

2. If approximately 5/10 of the total employees at CMI work at Plant 1 and Plant 2, and if 3/10 of the CMI employees work at the Lydia Plant, how many employees work at the Bailey Plant?

3. How many yards of cloth will 421 looms weave in 48 hours if one loom weaves 7 1/4 yards per hour?

4. One employee inspects 243 2/3 yards of cloth on Monday, on Tuesday she inspects 264 1/8 yards of cloth, on Wednesday, she inspects 259 5/6 yards of cloth. How many yards of cloth has she inspected so far this week?

5. If a loom weaves 8 3/4 yards of cloth in one hour, how long will be required to weave a cut of 140 yards?

MATH FOR TEXTILE TECHNICIANS WORD PROBLEMS

1. Harry had three bobbins of yarn to put on a machine. One bobbin weighed 1.43 lbs., another weighed 1.501 lbs, and the last one weighed 1.890 lbs. What was the total weight of all three bobbins?

2. On Monday, sweep waste was 23.8 lbs., on Tuesday, sweep waste was 22.10 lbs, and on Wednesday, sweep waste was 19.2 lbs. What was the difference between sweep waste on Monday and that of Wednesday?

3. The spinning room has two hundred and thirty-five spinning frames. We ran 3/5 of the frames on Monday. How many frames did not run?

4. Spooler drums are running 13.64 yards per minute. By changing pulleys, the drum is changed to run 11.324 yards per minute. What is the difference in the drum speeds?

5. A beam running blend has a diameter of 24 7/8 inches and a beam running cotton has a diameter of 26 2/3 inches. What is the difference between the diameter of the cotton beam and the blend beam?

6. Joey lives 3.5 miles from work. He drives all the way around the parking lot each day to park in the space next to the exit The distance around the parking lot is .2 mile. How many miles does he travel to work and back when he does not stop at Hardee's?

7. Janice runs 5 MJS spinning frames. The efficiency rates for her frames on Wednesday were: frame #11--91.3, frame #12--97.6, frame #13--94.7, frame #14--92.6, and frame #15 --98.1. What was Janice's average efficiency rating for that day? (Hint: Remember to get an average you must divide 5.)

8. The cost of a filling detector is $94.25 each. Dennis, the supply clerk, ordered 6 of these on Tuesday and another 3 on Friday. How much will the total cost be for filling detectors?

9. Andrew used 1/3 gallon of thinner on Tuesday, 1/4 gallon on Wednesday, and the remainder of the gallon on Thursday. How much thinner did he use on Thursday?

10. In order to properly set a card, the doffer must be set to the cylinder. This should be set at .005. Due to an accident or human error the doffer was set at .05521. How far off was the setting (to the nearest thousandth)?

11. Gracie figured out that there are 30 women on third shift at Bailey Plant. There are a total of 90 employees. Help Gracie figure out the fraction that shows the number of women on third shift? (Reduce to lowest terms.)

12. How many yards of cloth will 421 looms weave in 1 hour if one loom weaves 7 ½ yards per hour?

13. Jean inspected 243 2/3 yards of cloth on Monday, on Tuesday, she inspected 264 1/8 yards of cloth, on Wednesday, she inspected 259 5/6 yards of cloth. How many yards of cloth has she inspected so far this week?

14. Mary can weave 8 3/4 yards of cloth in one hour on loom #6. How long will be required to weave a cut of 140 yards?

15. If 3/4 of the students in the Math for Textile Technicians classes make very good grades on the final review, how many would that be if there are approximately 80 students?

Revised 5/96

College: ESJC____ MSTC_____ **WORKFORCE 2000 PARTNERSHIP** **Date:**_____
Course#:_____ **INDIVIDUAL EDUCATION PLAN** **Level:**_____

Name:_____**Male:**___**Female:**___**Age:**____**Birthdate:**_____

Street:_____**Social Security#:**_____

City:_____**State:**_____**Zip:**_____**Phone#:**(____)_____

Classification: In-State Student___Out-of-State Student___(State)_____International Student___ (Country)_____

Mark Only One: Civilian____Active duty____Retired Military____Military dependent____

Race: White___Hispanic___Asian___Black___American Indian ____Pacific Islander ____Alaskan Native ___Other(Specify)_____

Marital Status: Single____Married____Separated____Divorced____Widowed____

Number of Children Living with You:_____

Employer:_____**How Long?**_____**Job Title:**_____

How many hours per week do you work this job?_____**Do you have more than one job?**_____

Please rate your ability to perform each of the following activities.(P=Poor, F=Fair, G=Good, E=Excellent):

Read English____ Understand English____ Speak English____ Write English____

Work as part of a team____ Use Math____ Solve problems/use reasoning____

Which of the following are required for your job? (Check all that apply)

Read Instructions_____ Speak English_____ Receive Spoken Instruction in English_____

Write English_____ Use Math____ Solve Problems____ Team work____

What are your vocational goals? Immediate_____Long Range_____

Circle the highest grade you completed: 0 1 2 3 4 5 6 7 8 9 10 11 12 GED 13 14 15 16 17 18

Last school attended:_____

What are your educational goals? (Check all that apply)

Improve skills for current job___ Improve skills for changing technology/future jobs____

Improve reading/writing/math___ Improve problem solving/critical thinking___ Improve speaking/listening____

Improve English(for non-native speakers)___ Pass GED tests___ Other(specify)_____

How would you like to be contacted? Through supervisor___Call at home___Letter___Other_____

WORKFORCE 2000 PARTNERSHIP
Individual Education Plan
Learner's Page

Name of Course: Math for Textile Technicians
Date of Course: _____

Name: _____
Employer: _____

GOAL(S)	INSTRUCTIONAL OBJECTIVES	LEARNING ACTIVITIES	PREVIEW/REVIEW SCORE		EVALUATION COMMENTS
•Improve skills for current job	(Preview)	Preview	____	X	
•Improve skills for changing technology future jobs	(Motivation)	Math Thinking Strategies Bookmark			
•Improve math skills	Perform computations of addition, subtraction, multiplication, and division, including multiple operations using decimals.	"Working with Decimals" - Handout Decimals Book Discussion of all functions using decimals Decimals handouts Decimals Skills Review p. 28-29 from book			
	III. B. 100 Perform computations of addition, substraction, multiplication, and division, including multiple operations, using common or mixed numbers	"Working with Fractions" - Handout Fraction Book Discussion of all functions using decimals Fractions Skills Review p. 28-29 from book			

GOAL(S)	INSTRUCTIONAL OBJECTIVES	LEARNING ACTIVITIES	PREVIEW/REVIEW SCORE		EVALUATION COMMENTS
	III. B. 101 Perform computation of addition, subtraction, multiplication, and division, including multiple operations using percentages.	"Working with Percents" - Handout Percents Book Discussion of all functions using percents Percents Skills Review p. 28-29 from book.			
	Review	Review	X	____	

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Employee Signature Date

Instructor Signature